

CLAIMS

1. An enciphering method comprising a step of  
 5 formatting a message in clear (m) by means of a  
 formatting function ( $\mu$ ), and a step of exponentiation  
 of the result of the previous step using a public key  
 (N, e) in accordance with the equation  $c = \mu(m)^e \bmod N$ ,  
 c being an enciphered message,  $\mu(m)$  being the result of  
 10 the formatting step, and e and N elements of the public  
 key,

the method being characterised in that the  
 formatting function ( $\mu$ ) is the PSS function.

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2. A method according to claim 1, characterised  
 in that the formatting function  $\mu$  is defined by

$$\mu(m) = \text{PSS}(m) = \omega || s, \text{ with:}$$

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m, the text in clear of  $k - k_0 - k_1$  bits, r a  
 random parameter of  $k_0$  bits, k,  $k_0$ ,  $k_1$  being parameters  
 of the formatting function,

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$||$  a concatenation function

$$\omega = H(m || r)$$

$$s = G(\omega) \oplus (m || r)$$

$\otimes$  a logic function XOR, and

H, G two hashing functions

3. Use of a probabilistic signature function (PSS) defined according to the standard PKCS #2 v 2.1, RSA cryptography standard as a formatting function ( $\mu$ ),  
 5 in order to effect an enciphering method comprising a step of formatting a message in clear ( $m$ ) by means of the formatting function ( $\mu$ ), and a step of exponentiation of the result of the previous step by means of a public key ( $N, e$ ) in accordance with the  
 10 equation  $c =$

$\mu(m)^e \bmod N$ ,  $c$  being an enciphered message,  $\mu(m)$  being the result of the formatting step, and  $E$  and  $N$  elements of the public key.

15 4. A cryptographic system comprising:

- a step of formatting a message in clear ( $m$ ) by the probabilistic signature function (PSS), and then:

20 - if an enciphering of the message in clear ( $m$ ) is required, a step of exponentiation of the result of the formatting step by means of a first key ( $N, e$ ) in accordance with the equation  $c = \mu(m)^e \bmod N$ ,  $c$  being an enciphered message,  $\mu(m)$  being the result of the  
 25 formatting step, and  $e$  and  $N$  elements of the first key, or

- if a signature of the message in clear ( $m$ ) is required, a step of exponentiation of the result of the  
 30 formatting step by means of a second key ( $N', d'$ ) in

accordance with the equation  $s = \mu(m)^{d'} \bmod N'$ ,  $s$  being a signed message,  $\mu(m)$  being the result of the formatting step, and  $d'$  and  $N'$  elements of the second key.

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5. A system according to claim 3, in which the first key and the second key are respectively a public key of a first pair of keys and a private key of a second pair of keys.

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6. A system according to claim 4, in which the first pair of keys and the second pair of keys are identical.

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7. A system according to one of claims 4 to 6, of the RSA type.

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8. An electronic component comprising programmed means for implementing an enciphering method according to one of claims 1 to 2, the programmed means comprising in particular a central unit and a program memory.

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9. An electronic component comprising programmed means for implementing a cryptographic system according to one of claims 4 to 7, the programmed means comprising in particular a central unit and a program memory.

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10. A chip card comprising an electronic

component according to claim 7 or claim 8.